GRANSKIY, Viktor Isidorovich; ANSEROV, M.A., kand.tekhn.nauk, nauchnyy redaktor; VOLOSHIN, D.A., [redacted]

[What the milling machine operator should read to improve his qualifications; a bibliography] Chto chitat' frezerovshchiku dlia povysheniia kvalifikatsii; rekomendatel'nyi ukazatel' literatury. Nauchnyi red.M.A.Anserov. Leningrad, Gos.publichnaia biblioteka im. M.E.Saltykova-Shchedrina, 1957. 43 p. (MIRA 10:11)
(Bibliography--Metal cutting)

BLYUMBERG, Vitaliy Al'bertovich; LAKUR, Kirill Vasil'yevich; ANSEROV, M.A., kand.tekhn.nauk, dots., red.; BORODULINA, I.A., red.izd-va; POL'SKAYA, R.G., tekhn.red.

[Screw-cutting on lathes] Narezanie rez'by na tokarnykh stankakh. Izd. 2-oe, perer. i dop. Pod obshchei red. M.A.Anserova. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 68 p. (Bibliotechka tokaria-novatora, no.6) (MIRA 11:4)
(Screw-cutting machines)

ANSKROV, Mikhail Alekseyevich; VAKSER, D.B., dotsent, red.; CHFAS, M.A., red.; [illegible], red.

[Attachments for lathes] Prisposobleniia dlia tokarnykh stankov. Izd.2-oe, dop.i perer. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 124 p. (Bibliotechka tokaria-novatora, no.4) (MIRA 11:1)

(Lathes--Attachments)

KUCHER, Iosif Mikhaylovich; KUCHER, Aleksandr Mikhailovich; ANSEROV, M.A., kand.tekhn.nauk, dotsent, red.; SHAVLYUGA, N.I., kand.tekhn.nauk, dotsent, retsenzent; MANSYREV, I.G., inzh., red.; CHFAS, M.A., red. izdatel'stva; POL'SKAYA, R.G., tekhn.red.

[Lathes; their modernization and automatization] Tokarnye stanki, ikh modernizatsiia i avtomatizatsiia. Izd.2-oe, perer.i dop. Pod obshchei red.M.A.Anserova. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 138 p. (Bibliotechka tokaria-novatora, no.3) (MIRA 10:12)

(Lathes)

SERGEYEV, Mikhail Afanas'yevich, NIKITIN, Pavel Sergeyevich,[deceased],; ANSEROV, M.A., kand. tekhn. nauk, dots., red.; AZAROV, A.S., kand. tekhn. nauk, dots., red.; LEYKINA, T.L., red. izd-va,; POL'SKAYA, R.O., tekhn. red.

[Organization of work areas and safety engineering] Organizatsiia rabochego mesta i tekhnika bezopasnosti. Izd. 2., dop. i perer. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 52 p. (Bibliotechka tokaria-novatora, no. 10). (MIRA 11:11)
(Industrial safety)
(Machine-shop practice)

ANSEROV, Mikhail Alekseyevich; VELIKANOV, Karp Mironovich; CZERKOVICH, Mikhail Israilevich; ANSEROV, M.A., kand.tekhn.nauk, dotsent, red.; VAKSER, D.B., dotsent, retsenzent; BORODULINA, I.A., red. izd-va; POL'SKAYA, R.G., tekhn.red.

[Increasing labor productivity and lowering production costs in lathework] Povyshenie proizvoditel'nosti truda i snizhenie zatrat pri tokarnoi obrabotke. Pod obshchei red. M.A. Anserova. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1958. 93 p. (Bibliotechka tokaria-novatora, no.1) (MIRA 12:1)
(Labor productivity) (Turning)

PAZYUK, Yevgeniy Ivanovich; ANSEROV, M.A., kand.tekhn.nauk, dots., red.; LEYKINA, T.L., red.izd-va; POL'SKAYA, R.G., tekhn.red.

[Machining parts on vertical turning lathes] Obrabotka detalei na karusel'nykh stankakh. Pod obshchei red. M.A.Anserova. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1958. 98 p. (Bibliotechka tokaria-novatora, no.8) (MIRA 11:5)
(Turning)

PODPORKIN, Viktor Grigor'yevich; BOL'SHAKOV, Sergey Anisimovich; VUL'F, A.M., kand.tekhn.nauk, dots., retsenzent; ANSEROV, M.A., kand. tekhn.nauk, dotsent, red.; REZNITSKIY, L.M., kand.tekhn.nauk, red.; BORODULINA, I.A., red.izd-va; POL'SKAYA, R.G., tekhn.red.

[Cutting tools and metal machining] Tochenie metallov i rezinv. Pod.red. M.A.Anserova. Izd.2., dop. i perer. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1958. 145 p. (Bibliotechka tokarja - novatora, no.2) (MIRA 12:3)
(Cutting tools) (Turning)

BLYUMBIRO, Vitaliy Al'bertovich; SERGEYEV, Mikhail Afanas'yevich; ANSEROV, M.A., kand.tekhn.nauk dots., red.; LOMACHENKOV, S.Ye., inzh., red.; BORODULINA, I.A., red.izd-va; POL'SKAYA, R.G., tekhn.red.

[Machining parts on lathes] Obrabotka detalei na tokarnykh stankakh. Pod obshchei red. M.A.Anserova. Izd. 2-oe, perer. i dop. Moskva, Gos. nauchno-tekhnicheskoe izd-vo mashinostroit. lit-ry, 1958. 181 p. (Bibliotechka tokaria-novatora, no.5) (MIRA 11:5)
(Turning)

GRANSKIY, Viktor Isidorovich; KOMAROV, V.B., prof., doktor tekhn.nauk, retsenzent; POZIN, M.Ye., prof., doktor khim.nauk, retsenzent; TUMAREV, A.S., prof., doktor tekhn.nauk, retsenzent; KARPOV, V.G., dotsent, kand.tekhn.nauk, retsenzent; BLYUMBERG, V.A., kand.tekhn.nauk, retsenzent; BESPALOV, I.V., inzh., retsenzent; RIVLIN, L.B., inzh., retsenzent; ANSEROV, M.A., kand.tekhn.nauk, obshchiy red.; VOLOSHIN, D.A., red.; TOLOCHINSKAYA, B.M., bibliogr.red.

[Guide to technical reference books] Putevoditel' po tekhnicheskim spravochnikam. Pod obshchei red. M.A.Anserova. Leningrad, Gos. publichnaia biblioteka im. M.E.Saltykova-Shchedrina, 1958. 334 p. (MIRA 12:8)

(Bibliography--Technology)

MITROFANOV, Sergey Petrovich, kand.tekhn.nauk; ANSKROV, M.A., nauchnyy red.; SIMANOVSKIY, N.Z., red.; MALYAVKO, P.I., red.; SMIRNOV, P.S., tekhn.red.

[Scientific bases of the group technology] Nauchnye osnovy gruppovoi tekhnologii. Leningrad, Lenizdat, 1959. 434 p. (MIRA 12:8)

(Mechanical engineering)

25(5) SOV/117-59-2-4/27

AUTHOR: Anserov, M.A., Candidate of Technical Sciences

TITLE: The Group Technological Processes in Machine and Instrument Construction (Gruppovyye tekhnologicheskiye protsessy v mashinostroyenii i priborostroyenii)

PERIODICAL: Mashinostroitel', 1959, Nr 2, pp 3-6 (USSR)

ABSTRACT: The system of planning work processes for every individual item is very costly and time-consuming. For example, the Kirovskiy zavod (Kirov Plant) in Leningrad has maintained 140,000 separate cards of technical processes. Approximately the same number of cards are maintained by the Leningrad metallicheskiy (Metal) Plant, plant "Elektrosila" and others. The Moscow stankostroitel'nyy (Machine Tools) Plant imeni Sergo Ordzhonikidze works out over 5,000 processes every month. The plant "Russkiy Dizel'", for 4,300 individual work processes, uses about 6,000 special devices and stamps, and over 14,000 various tools. The introduction of the group machining

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The Group Technological Processes in Machine and Instruments Construction

method greatly simplifies and improves the production. The method was worked out by Candidate of Technical Sciences S.P. Mitrofanov. It is a development of the idea formulated 20 years ago by Professor A.P. Sokolovskiy. The first step in the unification of technological processes is classification of works of general purpose, such as shafts, discs, levers, forks, bushes, gears, etc. Every class is subdivided into specific technological groups as to size, form and types of surface. The group machining method is worked out for one typical item. Practical experience in some plants has shown, that one group can comprise up to 40 and more various items. Once the given machine tool is regulated for working up one typical item, it can work up all other items belonging to the same group. Not only ordinary machine tools, but also automatic machines can be set for working up such groups of items. The metho

The Group Technological Processes in Machine and Instruments Construction

not only simplifies and improves the work, but also considerably reduces the cost of working out the norms. The rate of production of capstan lathes, boring and milling machines of some plants converted to the group machining method increased by 30-40%. The cost of working out the technological processes becomes less by about the same percentage, while the cost of planning drops by 50-70%.

Card 3/3

PHASE I BOOK EXPLOITATION SOV/5392

Anserov, Mikhail Alekseyevich, Candidate of Technical Sciences, Docent

Prisposobleniya dlya metallorezhushchikh stankov; raschety i konstruktsii (Fixtures for Metal-Cutting Machines; Designs and Constructions) Moscow, Mashgiz, 1960. 623 p. Errata slip inserted. 20,000 copies printed.

Reviewer: A.S. Azarov, Candidate of Technical Sciences; Ed.: D.B. Vakser, Docent; Ed. of Publishing House: M.A. Chfas; Tech. Ed.: L.V. Shebetinina; Managing Ed. for Literature on Machine-Building Technology (Leningrad Division, Mashgiz): Ye. P. Naumov, Engineer.

PURPOSE: This book is intended for process engineers and designers of accessories. It may also be used by students specializing in the processing of metals.

COVERAGE: The book presents a systematized generalization of machine-tool fixture design. Elements, subassemblies, mechanisms, and the actuation of fixtures are discussed. Special attention is given to designs which insure

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BELYAYEV, Georgiy Sergeyevich; TABACHNIKOV, Petr Isayevich; PODPORKIN, V.G., doktor tekhn. nauk, retsenzent; ANSEROV, M.A., kand. tekhn. nauk, red.; VAKSER, D.B., kand. tekhn. nauk, red. KUREPINA, G.N., red.izd-va; CHFAS, M.A., red. izd-va; SHCHETININA, L.V., tekhn. red.

[Technological processes in the manufacture of shafts] Tekhnologiia proizvodstva valov. Moskva, Mashgiz, 1961. 250 p. (MIRA 15:2)

(Shafting)

ANSEROV, Mikhail Alekseyevich, dots., kand. tekhn. nauk; SHENENKO, P.A., inzh., red.; FOMICHEV, A.G., red.izd-va; BELOGUROVA, I.A., tekhn. red.

[Mechanization and automation of machine-tool attachments; survey] Mekhanizatsiia i avtomatizatsiia stanochnykh prisposobleniia; obzor. Leningrad, 1961. 101 p. (MIRA 15:5)
(Machine tools--Attachments) (Automation)

MITROFANOV, Sergey Petrovich, Laureat Leninskoy premii, doktor tekhn. nauk; ANSEROV, M.A., red.; GRIGOR'YEVA, I.S., red. izd-va; BELOGUROVA, I.A., tekhn. red.

[Scientific fundamentals for technological planning of production]Nauchnye osnovy tekhnologicheskoi podgotovki proizvodstva; obzor. Leningrad, 1962. 77 p. (MIRA 15:8)
(Industrial management)

MITROFANOV, Sergey Petrovich; GUTNER, Naum Grigor'yevich; KUCHER, I.M., kand. tekhn. nauk, retsenzent; ANSEROV, M.A., kand. tekhn. nauk, red.; CHFAS, M.A., red. izd-va; KUREPINA, G.N., red. izd-va; SHCHETININA, L.V., tekhn. red.

[Turret lathes and their efficient use]Revol'vernye stanki i ikh ratsional'noe ispol'zovanie. Moskva, Mashgiz, 1962. 349 p. (MIRA 16:3)

(Lathes) (Turning)

ZAVISLYAK, Nikolay Iosifovich; SHAMANIN, A.V., inzh., retsenzent; ANSEROV, M.A., kand. tekhn.nauk, red.; VARKOVETSKAYA, A.I., red.izd-va; SPERANSKAYA, O.V., tekhn. red.

[Modern attachments for machine tools]Sovremennye prisposobleniia k metallorezhushchim stankam. Moskva, Mashgiz, 1963. 176 p. (MIRA 16:4)
(Machine tools—Attachments)

MITROFANOV, Sergey Petrovich; ANSEROV, M.A., red.; TELYASHOV, R.Kh., red.izd-va;

[Over-all mechanization and automation in group production] Kompleksnaia mekhanizatsiia i avtomatizatsiia v usloviiakh gruppovogo proizvodstva. Leningrad, 1963. 27 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Mekhanicheskaia obrabotka metallov, no.9) (MIRA 16:5)

(Metalwork--Equipment and supplies) (Automation)

LERINMAN, Samuil Markovich; PEREL'TSVAYG, Mikhail Izrailevich; ANSEROV, M.A., red.; ALABYSHEVA, N.A., red.izd-va; GVIRTS, V.L., tekhn.red.

[Engineering design of pneumatic cylinders; shorthand report of lectures] Inzhenernyi raschet pnevmaticheskikh tsilindrov; stenogramma lektsii. Leningrad, Leningr. dom nauchno-tekhn. propagandy, 1963. 42 p. (MIRA 17:4)

MITROFANOV, S.P., doktor tekhn. nauk, prof.; NEYMARK, A.I., doktor tekhn. nauk, retsenzent; AMSEROV, M.A., kand. tekhn. nauk, red.; VARKOVETSKAYA, A.I., red.izd-va; CHFAS, M.A., red.izd-va; SPERANSKAYA, O.V., tekhn.red.

[Scientific fundamentals of the organization of multiple machining in industrial production] Nauchnye osnovy organizatsii gruppovogo proizvodstva. Moskva, Mashgiz, 1963. 304 p. (MIRA 17:1)

ANSEROV, M.A., kand. tekhn. nauk; BARON, Yu.M., inzh., red.

[Attachments for machine tools; design and construction] Prisposobleniia dlia metallorezhushchikh stankov; raschety i konstruktsii. Izd.2., perer. i dop. Moskva, Mashinostroenie, 1964. 650 p. (MIRA 17:12)

ANSIMOV, N. I.

"Turks of Soviet Azerbaydzhan" (Tyurki sovetskoyo Azerbaydzhana), Baku, 1950

"Talyshi, a medico-anthropological study," Baku, 1952

"Arterial System of the Human Skeleton" (Artenal'naya sistema skeleta cheloveka), Moscow, 1959.

Bol'shaya Sovetskaya Entsiklopediya, Vol. II, 2nd Ed., p. 472, 1949.

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A005/A001

Translation from: Referativnyy zhurnal, Mashinostroyeniye, 1960, No. 17, p. 251, # 93592

AUTHOR: Ansercv, Yu.M.

TITLE: Simplified Calculation of Ultrasonic Catenoid Concentrators

PERIODICAL: Sb. statey Leningr. in-t tochnoy mekhan. i optiki, 1958, No. 38, pp. 157-161

TEXT: Formulae are considered for the simplified calculation of approximate catenoid concentrators, provided for magnifying the displacement amplitude of magnetostriction vibrators when utilizing ultrasonic waves for the mechanical treatment of hard and friable materials. The proposed formulae are based on the theoretic calculation presented at the Kafedra akustiki LETI im. V.I. Ul'yanova-Lenina (Department of Acoustics of LETI imeni V.I. Ul'yanov-Lenin) by L.G. Merkulov. For practical purposes, the calculation is considerably simplified and reduced to determining the resonance sizes of the concentrator and the amplification coefficient depending on the concentration ratio $N = \frac{D_1}{D_2}$ (where D_1 and D_2

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Simplified Calculation of Ultrasonic Catenoid Concentrates

are the greatest and the least diameters of the concentrator respectively). The length of the concentrator is determined in the following way: $l = \lambda/2\ (0.028 N + 0.91)$ for $2 < N < 5$, and $l = \lambda/2 - 0.155\ (N^{0.155} - 0.24)$ for $N > 5$, where λ is the ultrasonic wavelength in the concentrator material. The amplification coefficient is $K = 0.9\ N^{1.27}$ for $N > 2$.

K.A.V.

Translator's note: This is the full translation of the original Russian abstract.

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25(1) SOV/117-59-5-19/30

AUTHORS: Anserov, Yu.M. and Ter-Zakharyan, E.G., Engineers

TITLE: The Ultrasonic Cutting of Brittle Non-Metallic Materials

PERIODICAL: Mashinostroitel', 1959, Nr 5, pp 33-36 (USSR)

ABSTRACT: The theory of this process has been published in this periodical (Nr. 5 and 10, 1958) by Metelkin, V.V., Engineer and Metelkin, I.V., Candidate of Technical Sciences, and Markov, A.I., Candidate of Technical Sciences. This article gives complete technological details of the process to provide practical information for industry workers. The technology described was developed during 18 months of work with ultrasonic installations, cutting holes and blanks in glass and quartz, e.g. blanks for optical lenses, etc. Each of the two installations consists of a "UZG-2" 1 kw generator with smooth frequency adjustment between 13 and 27 kilocycles, and a machine tool with a magnetostrictive head. The work tool is a needle of "U8A" steel, or a tubular tool of other material (depending on the work diameter) soldered to a holder. The tool materials, as well as the other materials used in the

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The Ultrasonic Cutting of Brittle Non-Metallic Materials

process, are specified. Practical examples of the operation with different work and different tools are given. It is stated that the ultrasonic method has eliminated the use of expensive diamond tools, nearly completely eliminated rejects (using diamond tools, the rejects amounted to 90%), does not require highly-skilled workers, and has raised by 360 times the labor productivity (the machining of 12 parts which required 6 hours is now completed in 1 minute). Ultrasonic devices are now performing operations (cutting of holes with a diameter less than 0.5 mm in glass or quartz, piercing of holes with a curvilinear axis in non-metallic materials or cutting threads in hard alloys) impossible to achieve by any other known method. There are 9 sets of diagrams and 1 photograph.

Card 2/2

ANSHAKOV, P.

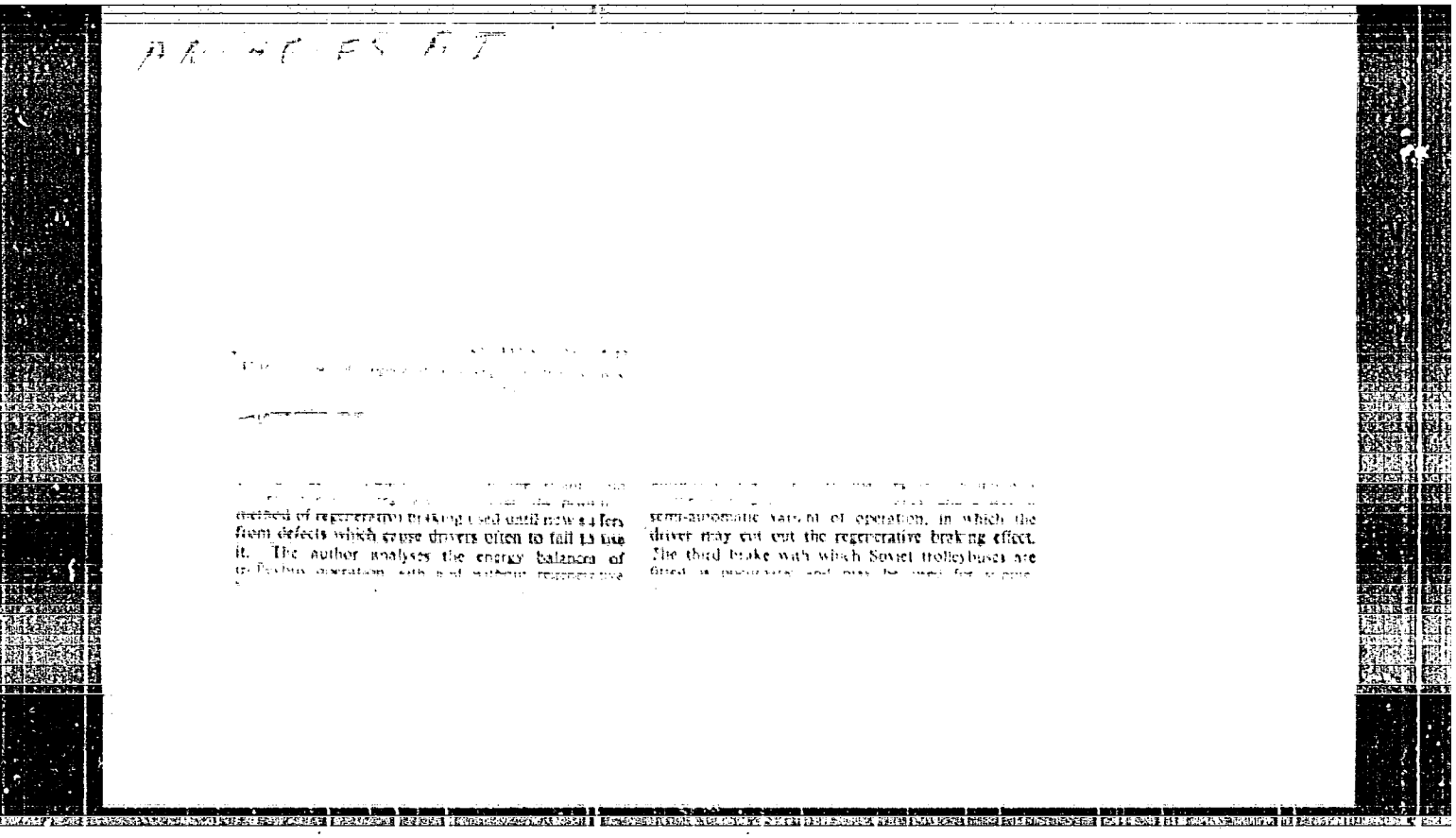
Distributing payments in kind on the brigade basis. Nauka i pered. op. v sel'khoz. 8 no.1:29-30 Ja '58. (MIRA 11:2)
(Collective farms) (Wages)

ANSHCHUKOV, A.M.

POSLAVSKIY, Ye.V.; ANSHCHUKOV, A.M.

Leptospirosis. Klin.med., Moskva no.4:58-63 Ap '50. (CLML 19:3)

1. Vladivostok.



method of regenerative braking used until now suffers from defects which cause drivers often to fail to use it. The author analyses the energy balances of

semi-automatic variant of operation, in which the driver may cut out the regenerative braking effect. The third brake with which Soviet trolleybuses are

LAKTYUSHKIN, V.A., kand.tekhn.nauk [deceased]; ANSHELES, A.I., inzh.; PUSTOSHNAYA, V.F., inzh.

Electric-panel heating system. Nov.tekh.mont.i spets.rab.v stroi. 21 no.9:18-20 S '59. (MIRA 12:11)
(Radiant heating) (Electric heating)

ANSHELES, I. I.

PA 196T91

USSR/Metals - Steel, Inclusions Jun 51

"Effect of Slag-Forming Conditions on the Character and Quantity of Nonmetallic Inclusions," I. I. Ansheles, Cand Tech Sci, V. G. Gruzin, Moscow Steel Inst imeni I. V. Stalin

"Litey Proizvod" No 6, pp 14, 15

Phys and chem properties of slag were studied during the melting process in a basic open-hearth furnace. Presents results of investigation as diagrams of: relation between quantity of nonmetallic inclusions in steel and

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USSR/Metals - Steel, Inclusions (Contd) Jun 51

the fluidity and basicity of slag; the amount of silicates in steel relative to concn of manganeous and ferrous oxides in slag; distribution of sulfur between ferrous sulfide and manganese in nonmetallic inclusions; content of inclusions in the form of free ferrous oxide.

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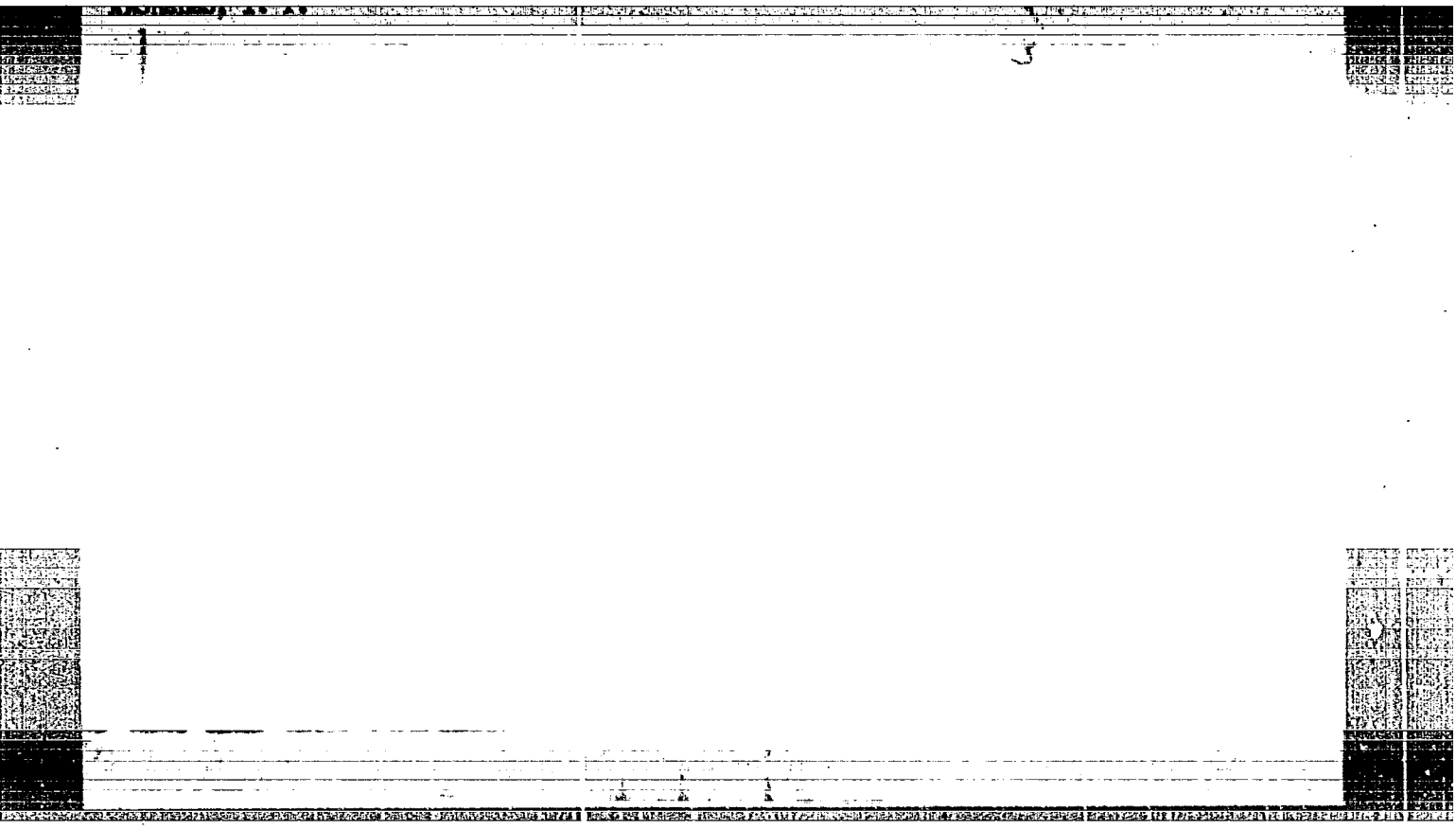

TRUBIN, K.G., professor, doktor tekhnicheskikh nauk; ABROSIMOV, Ye.V., dotsent, kandidat tekhnicheskikh nauk; ANSHELES, I.I., dotsent, kandidat tekhnicheskikh nauk.

Distribution of tungsten between the metal, slag, and gaseous state in steel smelting by the basic process. Sbor. Inst. stali 34:178-189 '55. (MLRA 9:7)

1. Kafedra metallurgii stali.
(Tungsten steel--Metallurgy) (Radioactive tracers--Industrial applications)

YEZHOV, G.I., inzhener; ABROSIMOV, Ye.V., dotsent; AUSHEVS, I.I., dotsent; TRUBIN, K.G., professor, doktor tekhnicheskikh nauk.

Effect of teeming conditions on the quality of pipe steel. Sber. Inst. stali 34:231-244 '55. (MLRA 9:7)

1.Kafedra metallurgii stali.
(Silver--Isotopes) (Pipe, Steel)

SOV/130-58-10-5/18

AUTHORS: Sokolov, G.A., Oyks, G.N. and Ansheles, I.I.

TITLE: Vacuum Treatment of Alloy Steel (Vakuumnaya obrabotka legirovannoy stali).

PERIODICAL: Metallurg, 1958, Nr.10, pp.10-14 (USSR)

ABSTRACT: In November 1957 an installation (described in "Metallurg", 1958, Nr.3) for the vacuum treatment of liquid steel was commissioned at the "Krasnyy Oktyabr'" works. The authors describe results obtained with vacuum treatment of type 30KhGSA steel in the ladle and also during pouring. Ladle treatment of 12-ton heats was effected in 20-ton ladles to allow for the "boiling" of the metal. Observations were made continuously on the slag surface and the stopper. Initially all heats behaved rather similarly, but later some continued to boil violently while others became quieter. Because of possible damage to stopper-rod sleeves and cooling of the metal the treatment was stopped 5-7 minutes after the attainment of a vacuum of 15-20 mm Hg. Vacuum fusion of samples showed that the hydrogen and nitrogen contents decrease by 0.3-2.0 $cm^3/100$ g and 0.0007-0.003%

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Vacuum Treatment of Alloy Steel.

respectively, through vacuum treatment. The metal oxygen decrease was irregular, but analyses of the gases evolved during treatment (Table 1) showed that generally 12-37% CO and CO_2 were present; interpretation of results is complicated by the presence of refractory-derived non-metallic inclusions and the determination of non-metallic inclusions is now being carried out in the finished steel. Frequency curves were constructed (Fig.2) from tests on the strength and plasticity characteristics of vacuum-treated and ordinary steels; both were better in the treated metal; the macrostructures were almost the same. In another method of treatment the vacuum was treated directly in the ingot mould (4.1 tons) during its filling from a tundish. The nozzle to the mould is initially closed with a thin steel plate, which enables evacuation to a residual pressure of 10-12 mm to be effected. The plate melts when the metal is poured on and the ingot mould is filled at a pressure of about 5-7 mm Hg in 2.5-3.0 minutes. The metal jet was then to be irregular and bubble-evolution was observed in the metal filling the mould, especially at the walls.

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The surface of ingots top-poured in this way differed little from that of ordinary bottom-poured ones. The slight blemishes on the edges of the vacuum poured ingots disappeared during heating in the soaking pits and there was rather less segregation. Comparison of the mechanical properties of rolled vacuum-treated and ordinary steel (Table 2) showed that the former was generally superior. The author urges that further improvements be made in the vacuum pouring process. There are 3 figures and 2 tables.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute).

ANSHELES, I.I.

S/133/60/000/004/002/010
A054/A026

AUTHORS: Oyks, G.N., Professor; Matevosyan, P.P., Engineer; Sokolov G.A., Engineer; Ansheles, I.I., Docent; Danilin V.I. Engineer; Koncnov, B.Z., Engineer

TITLE: New Process for Melting Ball-Bearing Steel

PERIODICAL: Stal', 1960, No. 4, pp. 308 - 313

TEXT: The melting of the metal in vacuum furnaces in order to ensure an adequate degree of degasification and deoxidation is not suitable for mass production, because the capacity of these furnaces is small, the equipment complicated and expensive. It was considered more effective to melt the metal in a conventional furnace and apply vacuum treatment subsequently in the ladle. However, this method did not yield satisfactory results and tests were carried out to incorporate the vacuum treatment in the technology of steel production. In the tests a unit was employed as that used in electrosteel foundries including the two PBH-60 (RVN-60) type plate-rotor type pumps connected in series with a capacity of 60 - 48 m^3/min, at a vacuum of 70 - 90% and a maximum vacuum of 15 mm Hg. In the range of residual pres-

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sures of 5 - 10 mm the pump capacity was 25 - 40 m^3/min. In order to raise the output of the pump system, steam jet ejectors were mounted at the outlet, producing a vacuum of 350 - 400 mm Hg. During the tests the vacuum treatment in the ladle was carried out: a) partly in accordance with the conventional technology, and b) partly according to a modified process. In the conventional melting process vacuum treatment in the ladle had only little effect on deoxidation and in order to obtain a satisfactory deoxidation of the metal it was necessary that the oxygen contained in the metal before the vacuum treatment be present in the form of a solution or in the structure of inclusions easily reduceable. This, however, was only possible, if effective deoxidizing agents, such as silicon and aluminum (Ref. 6) were absent from the solution. Therefore the reduction was carried out without ferrosilicon and aluminum which were only added to the ladle in the final stage of the vacuum treatment, mainly for the purpose of alloying. According to the new technology the ball-bearing steel was melted in a 12-ton basic arc furnace with at least 1.05% C in the metal when fusing. The bath temperature was maintained at 1,580 - 1,620°C before skimming off the oxidizing slag, i.e., somewhat higher than the usual temperature allowing sufficient reserve for the subsequent vacuum treatment. After removing the slag fer-

ro-chrome was added in a quantity corresponding to the type of steel, with a slag mixture containing lime, fluorite, some chippings of fireclay and dinas, amounting to 3% of the weight of the metal (a little less than the amount thus far used). Then 25 kg forge-coke was added and the furnace was hermetically closed for 20 - 25 min. Evidently at a higher temperature of reduction a thoroughly oxidized slag could be obtained also without the addition of ferrosilicon. As in the new technology one of the most important purposes of the reduction was the desulfurization of the bath, the duration was determined by the initial sulfur content of the metal and the rate of desulfurization which could be somewhat lower than in the conventional process, where slag was additionally deoxidized by ferrosilicon. The analysis showed that for identical amounts of sulfur the rate of desulfurization was even higher in the new process due to the higher temperature during reduction. The ladle was put in the vacuum chamber when the sulfur content of the metal was about 0.15 - 0.18%. The vacuum treatment of the steel containing in the solution only carbon, chrome and manganese was accompanied by violent boiling, indicating the intensity of the deoxidation under the influence of the carbon absorbed. After 5 - 6 min the boiling intensity decreased, and, while vacuum was maintained, 75%-ferrosilicon (in an amount

corresponding to the average silicon content of the steel produced) and aluminum (160 g/t) were added. Then the metal was boiled for a second time for 1.5 - 2 min. The complete vacuum treatment took only 8 - 10 min. The oxidizing agents added into the ladle were assimilated to a higher degree in the new than in the conventional process (ferrosilicon to 90% as compared to 65% and aluminum to 56% instead of 30.4%). The non-metallic contaminations were analysed quantitatively according to ГОСТ 801-47 (GOST 801-47) and the globular inclusions according to the scale of TsNIIPP. The chemical and metallographical tests on non-metallic inclusions also proved the greater purity of the steel. The new method is economical: melting was shortened, reduction took 20 min less, the consumption of deoxidizing agents and the quantity of waste products decreased. The saving was 15 roubles per ton. There are 4 figures, 3 tables and 7 Soviet references.

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PHASE I BOOK EXPLOITATION SOV/4548

Akademiya nauk SSSR. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali

Primeneniye vakuuma v metallurgii (Use of Vacuum in Metallurgy) Moscow, Izd-vo AN SSSR, 1960. 314 p. Errata slip inserted. 4,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A.A. Baykova. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali.

Resp. Ed.: A.M. Samarin, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: G.M. Makovskiy; Tech. Ed.: S.G. Markovich.

PURPOSE: This collection of articles is intended for technical personnel interested in recent studies and developments of vacuum steelmaking practice and equipment.

COVERAGE: The book contains information on steel melting in vacuum induction furnaces, and vacuum arc furnaces, reduction processes in vacuum, and degassing of steel and alloys. The functioning of apparatus and equipment, especially vacuum furnaces and vacuum booster pumps is also analyzed. Personalities are mentioned in connection with some of the articles and will appear in the Table of Contents. Three articles have been translated from English. Some of the

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Chuyko, N.M., A.F. Trachenko and Ye.I. Ladinov. The Effect of Vacuum Treatment of Metal Pouring on the Quality of ShKh15 Steel [the work was performed by the Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute) and the "Dneprospetsstal'" (Dnepr Special Electrical Steel Mill, in Zaporozh'ye) with the participation of engineers V.B. Rutkovskiy, M.P. Lenishchev, T.M. Bobkov, L.S. Barash, A.N. Mon', Yu.P. Shamil', A.I. Khitrik, F.A. Zhalo, Yu.P. Valevich and G.P. Parkhomenko] 189

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PHASE I BOOK EXPLOITATION SOV/5556

Moscov. Institut stali.

Novoye v teorii i praktike proizvodstva martenovskoy stali (New [Developments] in the Theory and Practice of Open-Hearth Steelmaking) Moscow, Metallurgizdat, 1961. 439 p. (Series: Trudy Moskovskogo nauchnogo soveshchaniya) 2,150 copies printed.

Sponsoring Agency: Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya RSFSR. Moskovskiy institut stali imeni I. V. Stalina.

Eds.: M. A. Glinkov, Professor, Doctor of Technical Sciences, V. V. Kondakov, Professor, Doctor of Technical Sciences, V. A. Kudrin, Docent, Candidate of Technical Sciences, O. M. Oyks, Professor, Doctor of Technical Sciences, and V. I. Yavoyskiy, Professor, Doctor of Technical Sciences; Ed.: Ye. A. Borko; Ed. of Publishing House: N. D. Gromov; Tech. Ed.: A. I. Karasev.

PURPOSE: This collection of articles is intended for members of scientific institutions, faculty members of schools of higher education, engineers concerned with metallurgical processes and physical chemistry, and students specializing in these fields.

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COVERAGE: The collection contains papers reviewing the development of open-hearth steelmaking theory and practice. The papers, written by staff members of schools of higher education, scientific research institutes, and main laboratories of metallurgical plants, were presented and discussed at the Scientific Conference of Schools of Higher Education. The following topics are considered: the kinetics and mechanism of carbon oxidation; the process of slag formation in open-hearth furnaces using in the charge either ore-lime briquets or composite flux (the product of calcining the mixture of lime with bauxite); the behavior of hydrogen in the open-hearth bath; metal desulfurization processes; the control of the open-hearth thermal melting regime and its automation; heat-engineering problems in large-capacity furnaces; aerodynamic properties of fuel gases and their flow in the furnace combustion chamber; and the improvement of high-alloy steel quality through the utilization of vacuum and natural gases. The following persons took part in the discussion of the papers at the Conference: S.I. Filippov, V.A. Kudrin, M.A. Glinkov, B.P. Nam, V.I. Yavoyskiy, O.N. Oyks and Ye. V. Chelishchev (Moscow Steel Institute); Ye. A. Kazachkov and A. S. Kharitonov (Zhdanov Metallurgical Institute); N.S. Mikhaylets (Institute of Chemical Metallurgy of the Siberian Branch of the Academy of Sciences USSR); A.I. Stroganov and D. Ya. Povolotskiy (Chelyabinsk Polytechnic Institute); P.V. Umrikhin (Ural Polytechnic Institute); I.I. Fomin (the Moscow "Serp i molot" Metallurgical Plant); V.A. Puklev (Central Asian Polytechnic Institute)

and M.I. Beylinov (Night School of the Dneprodzerzhinsk Metallurgical Institute). References follow some of the articles. There are 268 references, mostly Soviet.

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Levin, S. L. [Professor, Doctor of Technical Sciences, Dnepropetrovskiy metallurgicheskiy institut - Dnepropetrovsk Metallurgical Institute].

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Butakov, D.K. [Docent], L.M. Mel'nikov [Engineer], A.M. Lirman, V.D. Budennyy, P.P. Babich, and A.I. Sinkevich [Ural Polytechnic Institute, Zavod im. Ordzhonikidze Chelyabinskogo sovnarkhoza - Plant imeni Ordzhonikidze of the Chelyabinsk Sovnarkhoz]. Special Features of Making Steel in Open-Hearth Furnaces With Magnesite-Chromite [Brick] Roofs 290

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New [Developments] in the Theory (Cont.) SOV/5556

Oyks, O.N., V.I. Danilin [Engineer], I.I. Ansheles [Docent, Candidate of Technical Sciences], O.A. Sokolov, and B.Z. Kobonov [Engineers], [Moscow Steel Institute, "Krasnyy Oktyabr'" Plant]. Manufacture of Roll-Bearing Steel With the Application of Ladle-Vacuum Treatment to Non-Deoxidized Metal 335

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Nekrasov, Yu. V. [Engineer, Kuznetsk Metallurgical Combine]. Properties of Carbon and Alloy Steel Deoxidized by Different Methods 351
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PHASE I BOOK EXPLOITATION SOV/5411

Konferentsiya po fiziko-khimicheskim osnovam proizvodstva stali. 5th, Moscow, 1959.

Fiziko-khimicheskiye osnovy proizvodstva stali; trudy konferentsii (Physicochemical Bases of Steel Making; Transactions of the Fifth Conference on the Physicochemical Bases of Steelmaking) Moscow, Metallurgizdat, 1961. 512 p. Errata slip inserted. 3,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova.

Responsible Ed.: A. M. Samarin, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: Ya. D. Rozentsveyg. Tech. Ed.: V. V. Mikhaylova.

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Physicochemical Bases of (Cont.) SOV/5411

PURPOSE: This collection of articles is intended for engineers and technicians of metallurgical and machine-building plants, senior students of schools of higher education, staff members of design bureaus and planning institutes, and scientific research workers.

COVERAGE: The collection contains reports presented at the fifth annual convention devoted to the review of the physicochemical bases of the steelmaking process. These reports deal with problems of the mechanism and kinetics of reactions taking place in the molten metal in steelmaking furnaces. The following are also discussed: problems involved in the production of alloyed steel, the structure of the ingot, the mechanism of solidification, and the converter steelmaking process. The articles contain conclusions drawn from the results of experimental studies, and are accompanied by references of which most are Soviet.

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[The following persons participated in the research: T. M. Bobkov, Yu. P. Shamil', G. P. Parkhomenko, N. M. Shabli, and A. N. Men',]

ABROSIMOV, Yevgeniy Vasil'yevich; ANSHELES, Il'ya Iosifovich; KUDRIN, Viktor Aleksandrovich; KRYAKOVSKIY, Yuriy Vasil'yevich; ORLOV, Vladimir Ivanovich; YAVOYSKIY, V.I., prof., doktor tekhn. nauk, nauchnyy red.; GROMOV, N.D., red. izd-va; MIKHAYLOVA, V.V., tekhn. red.

[Metallurgy of steel; general course] Metallurgiia stali; obshchii kurs. By E.V.Abrosimov i dr. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 679 p. (MIRA 14:10)
(Steel--Metallurgy)

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A060/A101

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AUTHORS: Oyks, G.N., Danilin, V.I., Ansheles, I.I., Sokolov, G.A., Kononov, B.Z.

TITLE: Production of ball-bearing steel with the use of ladle-vacuuming of the unreduced metal

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 11, 1961, 59, abstract 11V346 (V sb. "Novoye v teorii i praktike proiz-va martenovsk.stali", Moscow, Metallurgizdat, 1961, 335-342, Discuss. 428 - 439)

TEXT: According to the new technique the smelting of ball-bearing steel in basic furnaces is carried out with complete oxidation and resmelting. The oxidation period is carried out forcedly with the use of ore. The vat temperature before the elimination of the oxidizing slag is 1,590-1,620°C. After drawing off the oxidizing slag and correcting the metal with respect to its C content, Cr and Mn content, one adds in a single dose a slag mixture (3% of the weight of the metal) consisting of lime, spar, chamotte and Dinas block. Then a portion of ground coke is put on top of the slag, the furnace is hermetically closed and soaking proceeds for 20-25 min. After attaining an S content of 0.015-0.008% the smelt is

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S/137/61/000/008/009/037
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AUTHORS: Danilin, V. I., Ansheles, I. I., Sokolov, G. A., Kononov, B. Z.

TITLE: New technique for producing ball-bearing steel under vacuum

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 8, 1961, 35, abstract 8V219 (V sb. "Fiz.-khim. osnovy proiz-va stali". Moscow, Metallurgizdat, 1961, 466-473)

TEXT: The authors describe the results of an investigation of the quality of ball-bearing steel smelted by a new technique involving the use of vacuum at the plant "Krasnyy Oktyabr'". The new technique provides for the reduction of the metal in a Fe-Mn furnace, and that of the slag - by ground coke. The metal is subjected to vacuum treatment in the ladle at an end pressure of 4 - 8 mm of mercury for a period of 8 - 10 min. About two minutes before the end of the vacuum treatment one introduces 3.6 kg/ton of 75% Fe-Si and 0.16 kg/ton of Al, and thereupon the metal is poured in air. The technique described ensures a maximum utilization of the reducing properties of C and a high degree of assimilation of Si (90%) and Al (56%). The shift to the new technique has led to a

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AUTHORS: Baranov, I.A., Oyks, G.N., and Ansheles, I.I.

TITLE: Improvement in the technology of production of ball bearing steel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1961, No.5, pp. 50-57

TEXT: The influence of changes in the technology of smelting ball bearing steel (in electric furnaces) as well as of some parameters of vacuo treatment on the quality of steel was investigated by statistical methods. Data collected during metallographic control of the quality of production were used for the investigation. Changes in the technology of smelting consisted of a decrease in the reducing period of smelting and the transfer of the deoxidizing treatment to the ladle under vacuum (G.A. Sokolov, G.N. Oyks, present journal 1959 No.1, Ref.1; G.N. Oyks, P.P. Matevosyan et al., Stal', 1960 No.4, Ref.2). The influence of the height of metal column in the ladle during vacuum treatment was studied by comparing the degree of contamination of the metal by inclusions for charges of 12 and 16 t

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(equivalent to an increase in the height of metal of 250-300 mm). The increase in the height of the metal resulted in a significant increase of oxides and globular inclusions but there was no significant change in the degree of contamination by sulphide inclusions (Table 1). It is assumed that the adverse influence of an increased height of metal in the ladle is due to an increase in the loss of deoxidants (due to oxidation), particularly of silicon, added under vacuum. The influence of the residual pressure, mm Hg, was studied by comparing the degree of contamination of the steel by oxides and globular inclusions, Fig.1 (degree of contamination, relative units vs. residual pressure, mm Hg; o - oxide inclusions; • - globular inclusions; numbers at points designate the number of specimens; the degree of oxidation of silicon, Fig.2 (residual Si in the steel vs. residual pressure, mm Hg; numbers designate the number of heats). With increasing residual pressure the degree of contamination somewhat decreases. The summary influence of the duration of pure boiling during the addition of deoxidants under vacuum (τ) and the depth of vacuum

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($P_{res.}$ - residual pressure) on the degree of contamination was expressed by the factor ($100\ \%/P_{res.}$). A statistical correlation of this factor with the degree of contamination by oxide or globular inclusions indicates that with increasing depth of vacuum and increasing duration of the degassing period, the degree of contamination decreases, Fig.3 (numbers at points designate the number of specimens, - - - oxides; ——— globular inclusions). This relationship was statistically significant. A comparison of mean values and standard deviations of the degree of contamination of steel produced by the old and modified smelting technology (Table 2) indicates that the latter gave steel less contaminated by oxide and globular inclusions but more contaminated by sulphide inclusions. Therefore, further modification of smelting technology was directed towards improving the degree of desulphurisation of the metal, durability of the ladle lining and a more uniform distribution of silicon throughout the volume of the metal. Experimental heats in a 16 ton electric furnace in which deoxidizing mixtures of powdered lime and spar were blown in during the

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oxidizing period were not satisfactory (Table 3). A noticeable desulphurisation was obtained only in the case when nitrogen was used as a carrier. The installation used for the injection is shown in Fig.4 (1 and 2 - valve for compressed air or nitrogen; 3 - nozzle for blast supply; 4 - nozzle for the supply of powdered desulphuriser in air or nitrogen; 5 - fixing of top cover; 6 - fixing of bottom cover; 7 - pressure gauge). A change in the slag practice was more successful. Usually the refining slag in a proportion of 2.5 - 3% of the weight of metal was made from a mixture containing 70-72% lime, 10-12% spar, 8-10% chamotte and 8-10% crushed Dinas refractory. In the new practice Dinas refractory was replaced by spar, and the weight of slag was increased to 3.5% of the weight of metal. A comparison of the sulphur content in the finished metal from 200 heats made with the usual and 186 heats made with modified slag showed that the average sulphur content of steel produced by the latter practice was 0.002% lower than in that produced by the former. Moreover, rejects of metal due to high sulphur practically ceased. The influence of

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ladle refractories on the behaviour of sulphur during vacuo treatment was also studied. It was observed that during vacuo treatment the content of alumina and silica in slag increases, decreasing its basicity by an average of 30%. As a result, the coefficient of sulphur distribution decreases and the occurrences of the reversion of sulphur in the vacuo treated steel were more frequent than in the usual steel (28% as against 7%). To preserve the desulphurising ability of slag and to increase the durability of the ladle lining a series of experimental heats was made in which the vacuo treatment of the steel was done in ladles fitted with a ring 460 mm high (at the level of slag-metal boundary), made from basic (magnesite and chromemagnesite) and neutral (high alumina) refractories. Under these conditions (50 heats) the basicity of the slag during the treatment decreased by only 9.5% against the previous 30% and the sulphur content of metal decreased by an average of 0.002-0.003% while in heats treated in ladles with the ordinary lining (85 heats) it remained practically unchanged. The durability of the ladles fitted with such a ring

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also increased (from 7-10 heats to 11-19 heats) despite some spoiling of basic bricks on cooling. Ball bearing steel deoxidized by carbon in the furnace is usually very pure as regards inclusions (0.0009-0.0011%). On tapping of such steel the amount of stable endogenic inclusions remains practically unchanged which confirms the assumption that the influence of secondary oxidation of steel not containing strong deoxidizers is insignificant. An increase in the amount of inclusions (0.0020-0.0040%) takes place during vacuo treatment and addition of deoxidants in the ladle. In vacuo treatment of steel secondary oxidation during teeming is much more dangerous than during tapping from the furnace of non-deoxidized steel, since during teeming it already contains some amounts of silicon and aluminium. For the protection of the stream of metal during teeming from secondary oxidation, tube rings with holes were used, through which a neutral gas (nitrogen or argon) was supplied. In these experiments no satisfactory results were obtained. By blowing a neutral gas (physical protection) the concentration of oxygen in the immediate neighbourhood of the metal stream could not be

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reduced below 10%. In the second series of experiments natural gas was used which reduced the concentration of oxygen below 1% (physical and chemical protection). The increase in the hydrogen content in the metal was insignificant (about 0.5 $cm^3/100$ g) and a most careful control of the microstructure of the metal indicated that the presence of a small amount of hydrogen inside the protecting ring has no negative effects on the metal quality. As a result of the protection of the metal stream by natural gas, the degree of contamination of the metal decreased by 0.2-0.4 units. An increased viscosity of slag during tapping of the heat and subsequent vacuum treatment caused difficulties in the deoxidation of the metal with 75% ferrosilicon. In individual cases, the metal was rejected due to incorrect analysis for silicon. The use of a 45% ferrosilicon proved to be more reliable. A comparison of data on the distribution of silicon along the height of the metal in the ladle deoxidized with a 45% ferrosilicon indicated that this was more uniform than that deoxidized with a 75% ferrosilicon. The coefficient of variation was 23.3%

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Improvement in the technology of production of ball bearing steel

and 31.6% respectively (statistical treatment of 120 heats of each type). A statistical analysis of the results of metallographic control of each type of heat showed that with the use of a 45% ferrosilicon the degree of contamination by globular inclusions decreases on the average from 1.24 ± 0.039 to 0.98 ± 0.034 units (statistically significant). The degree of contamination by oxides and sulphide inclusions remained practically unchanged. It appears from thermodynamic considerations that under vacuum silicon should not act as a deoxidant, nevertheless it forms inclusions since during the immersion of ferrosilicon into the metal some localised zones of a very high concentration of silicon are formed where, in accordance with the law of mass action, its oxidation takes place. In view of the above, the use of ferrosilicon as a deoxidant is inadvisable. To confirm this supposition, an experimental heat of ШХ 9 (ShKh9) steel was made. The duration of the vacuo treatment under a residual pressure of 7 mm was 8 minutes. The removal of the residual oxygen was done by aluminium added uniformly in small portions during teeming (50-60 g/ton). The metal stream was protected with natural gas.

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E071/E135

Improvement in the technology of production of ball bearing steel

An investigation of the macrostructure of this metal showed that it was not inferior to that of metal deoxidized with ferrosilicon. Metallographic control showed a decrease in the degree of contamination by inclusions. The latter investigation is being continued.
There are 6 figures, 3 tables and 6 references: 5 Soviet and 1 German.

ASSOCIATION: Moskovskiy institut stali
(Moscow Steel Institute)

SUBMITTED: August 19, 1960

Card 9/15

BARANOV, I.A.; OYKS, G.N.; ANSHELES, I.I.

Efficiency of the vacuum treatment of liquid steel. Izv. vys. ucheb. zav.; chern met. 5 no.1:60-61 '62. (MIRA 15:2)

1. Moskovskiy institut stali.
(Vacuum metallurgy)
(Steel—Metallurgy)

S/148/62/000/001/003/015
E111/E435

18 3700

AUTHORS: Baranov, I.A., Oyks, G.N., Anchelus, L.I.

TITLE: The effectiveness of vacuum treatment of liquid steel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no.1, 1962, 61-69

TEXT: Divergent views have been expressed on the effectiveness of different methods of vacuum treating steel. One view is that the ferrostatic head prevents effective vacuum treatment of large masses of liquid steel and various proposals for obviating this limitation by improving stirring have been made and adopted. The present authors have previously shown that the vacuum needed to produce complete deoxidation only affects inclusions in the steel up to a limit which, under their experimental conditions, was 20 to 25 mm Hg. Differences in ferrostatic-head equivalents of residual pressures for good and bad heats are small relative to the total depth of steel in the ladle and it appears that pumping rate must be another factor influencing degassing. An approximate calculation is made of the depth of penetration h of the reaction zone into the metal which governs the intensity of

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The effectiveness of vacuum ...

stirring. The calculation yields a differential equation, the solution of which is

$$h_M = \frac{1}{\gamma}\left[\left(1 + \frac{2\sigma}{r}\cdot 1{,}02\cdot 10^{-6}\right)e^{-K_{x.p}\,\tau} - \left(e^{-2.3A\tau} + \frac{2\sigma}{r}\cdot 1{,}02\cdot 10^{-6}\right)\right] \text{ cm.} \qquad (7)$$

This equation is valid for the particular case of $P_{CO} = P_{air} = 1$ atm; $K_{x.p}$ is the rate constant for the reaction $[C] + [O] = \{CO\}$. litre/sec. Taking $\sigma = 1250$ dyn/cm and $r = 0.1$ cm (melting temperatures 1550 and 1600°C), values found by means of Eq.(7) show that the mixing-zone depth depends more on the rate of the chemical reaction rather than on the pumping rate. Five experimental heats of ball-bearing steel were used to provide additional experimental data. Samples were taken from the furnace before tapping, from the ladle before vacuum treatment and from the ladle (from 3 levels) after vacuum treatment before introduction of the deoxidizer, and from the ladle after introduction of deoxidizer under vacuum. Determinations were made

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The effectiveness of vacuum ...

of hydrogen (by vacuum heating), nitrogen (wet method) and non-metallic inclusions (electrolytic solution of part of the sample). A further three heats were produced with top pouring, after ladle vacuum treatment, into a mould at a residual pressure of 15 to 25 mm Hg. Three ingots were also poured by the ordinary bottom pouring method. Gas samples were taken during vacuum treatment. No variation in nitrogen content up the ladle was detected. In the upper part of the vacuum treated metal in the ladle there is less hydrogen and non-metallic inclusions than lower down: this shows that the lower layers participate less in stirring under the vacuum and therefore undergo less purification. Comparison of the structure of ingots vacuum and air-poured showed the following: In the double-vacuum treated steel, the columnar crystal zone was reduced and a finer structure with a denser central zone was produced. Contrary to data on ingots subjected to a single vacuum treatment, there was little segregation. In billets rolled from ingots of double vacuum treated steel without silicon and aluminium a pronounced segregation square was found; their density was equivalent to that of billets from

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aluminium-killed steel. When vacuum-treated steels without silicon and aluminium were poured in air, the ingots developed porosity. This suggests that the second vacuum treatment of undeoxidized steel reduces the dissolved-oxygen content to that in equilibrium with carbon at the freezing temperature. The double vacuum treated ingots contained 0.0145% inclusions, the content after single vacuum treatment being 0.0360% and less uniformly distributed. This additional inclusion reduction is probably due to flotation promoted by gas evolution during vacuum pouring. There are 6 figures.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: October 14, 1961

Card 4/4

S/148/62/000/007/002/005
E071/E183

AUTHORS: Baranov, I.A., Oyks, G.N., Ansheles, I.I., Ponomareva, Ye.P., and Kachanov, N.N.

TITLE: Vacuum treated silicon-free ball-bearing steel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no.7, 1962, 78-85

TEXT: In an attempt to improve the purity of ball-bearing steel, the possibility of modifying the usual deoxidising practice (vacuum treatment in the ladle and addition of 6 kg/t of ferro-silicon and 160 g/t of aluminium) was investigated. Four heats of silicon-free ball-bearing steel were made in a 16-t electric furnace and teemed into 4-t ingots. At the end of the vacuum treatment [Abstractor's note: no details given] undeoxidised metal was passed for teeming. In two heats 60-100 g/t of aluminium was added to the funnel. In the remaining two heats, aluminium was added to the ingot mould; of these two ingots one was deoxidised and the other - teemed through the same syphon - was not deoxidised. The remaining metal from these two heats (not deoxidised either with silicon or aluminium) was top

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Vacuum treated silicon-free ... S/148/62/000/007/002/005
E071/E183

poured; one ingot under vacuum (3rd ingot) and one in air (4th ingot). From each ingot samples of rolled square (78 mm) were taken at a distance of 16, 30, 62 and 97.5% from the top; some specimens of the finished product (14-27 mm round) were also investigated. The results of the metallographic studies confirmed the data on the total amount of inclusions in steel, determined by the electrolytic dissolution of 3-5 specimens from each ingot. In steel produced by the usual method (deoxidation in the ladle and vacuum treatment) the amount of inclusions was 0.0026 wt.%; in silicon-free steel deoxidised on teeming in the funnel 0.0031 wt.%; deoxidised in the mould 0.0083 wt.%; and top poured under vacuum 0.0048 wt.%. The smallest amount of oxide inclusions was in steel teemed under vacuum without deoxidation. In all silicon-free heats the amount of globular inclusions was smaller than in the normal heats. Undeoxidised, bottom-poured steel had more impurities than top-poured steel. There are 5 figures and 2 tables.

ASSOCIATION: Moskovskiy institut stali i splavov
(Moscow Institute of Steel and Alloys)

Card 2/2

BARANOV, I.A.; OIKS, G.N.; ANSELES, I.I. [Ansheles, I.I.]

Efficiency of the treatment of liquid steel in vacuum. Analele metalurgie 16 no.4:55-63 O-D '62.

OYKS, Grigoriy Naumovich; MATEVOSYAN, Paruir Apetnekovich; ANSHELES, Il'ya Iosifovich; DANILIN, Vladimir Ivanovich; SOKOLOV, Gennadiy Anisimovich; BARANOV, Ivan Aleksandrovich; SELIVANOV, Viktor Mikhaylovich; PTITSYNA, V.I., red. izd-va; ISLENT'YEVA, P.G., tekhn. red.

[New technology of the manufacture of ball-bearing steel]Novaia tekhnologiia vyplavki sharikopodshipnikovoi stali. Moskva, Metallurgizdat, 1962. 124 p. (MIRA 16:2)
(Steel--Electrometallurgy) (Ball bearings)

ANSHELES, I. I.

PHASE I BOOK EXPLOITATION SOV/6329

Oyks, Grigoriy Naumovich, Paruir Apetnekovich Matevosyan, Il'ya Isaifovich Ansheles, Vladimir Ivanovich Danilin, Gennadiy Anisimovich Sokolov, Ivan Aleksandrovich Baranov, and Viktor Mikhaylovich Selivanov.

Novaya tekhnologiya vyplavki sharikopodshipnikovoy stali (New Technology of Melting Ball-Bearing Steel). Moskva, Metallurgizdat, 1962. 124 p. Errata slip inserted. 2250 copies printed.

Ed. of Publishing House: V. I. Ptitsyna; Tech. Ed.: P.G. Islent'yeva.

PURPOSE: This book is intended for metallurgical engineers of steel-melting shops and central plant laboratories. It may also be useful to students at tekhnikums and metallurgical schools of institutions of higher learning.

COVERAGE: The book reviews the new technology of making ball-bearing steel, which was introduced at the "Krasnyy Oktyabr'" Metallurgical Plant in Volgograd. Vacuum degassing of metal is discussed as

Card 1/4
1/2

ANSHELES, I. I

L 1669-65
EWT(m)/EWP(q)/EWP(b) IJP(c) MJW/JD

ACCESSION NR: AR4036013 B/0276/64/000/003/0009/0009 51

SOURCE: Ref. zh. Tekhnol. mashinostr. Sv. t., Abs. 3044

AUTHOR: Kachanov, N. N.; Sakhon'ko, I. M.; Pokalkina, V. N.; Laposhko, A. D.; Cyka, O. N.; Barunov, I. A.; Ansholes, I. I.

TITLE: The quality and properties of silicon-free bearing steel

CITED SOURCE: Tr. Vses. n.-i. konstrukt.-tekhnol. in-ta podshipnik. prom-sti, no. 1(33), 1963, 54-68

TOPIC TAGS: ShKh15 steel, silicon free steel, high purity steel, bearing steel, instrument bearing steel, stainless steel

TRANSLATION: An industrial method has been developed for making ShKh15 bearing steel, which does not contain silicon, making it possible to obtain metal with a smaller content of nonmetallic inclusions than is possible with ordinary steel-making methods. Silicon-free ShKh15 steel can be used for making instrument bearings and is recommended as an initial material for electroslag remelting. The hardenability and annealability of silicon-free steel from the heats that

Card 1/2

L 6669-65

ACCESSION NR: AR4036013

were tested were lower than in the case of ShKh15 steel produced by conventional methods. The contact resistance and strength properties, except for torsional strength, of silicon-free steel matched those of ShKh15 steel produced by conventional methods. The corrosion resistance in a 3% solution of NaCl of silicon-free ShKh15 steel was somewhat higher than that of ShKh15 steel produced by conventional methods. A drawback of the new industrial process is the instability of purity of the ShKh15 steel with respect to nonmetallic inclusions.

SUB CODE: MM. ENCL: 00

Card 2/2

L 21126-65 EPA(s)-2/EWT(m)/EWP(b)/T/EWA(d)/EWP(e)/EWP(t) ASD(m)-3/AS(mp)-2
WW/JD
ACCESSION NR: AP4045655 S/0133/64/000/009/0805/0808

AUTHOR: Oyks, G. N.; Matevosyan, P. A.; Ansheles, I. I.; Fatkullin, O. Kh.; Selivanov, V. M.; Shury*gin, G. D.; Sivkov, S. S.; Fedan, A. T.

TITLE: Results of vacuum casting ball-bearing steel by different methods

SOURCE: Stal', no. 9, 1964, 805-808

TOPIC TAGS: vacuum casting, ball bearing steel, degassing alumina rich brick lining

ABSTRACT: A new method involving vacuum casting by gas circulation was developed by the authors in collaboration with B. S. Petrov, M. N. Kul'kova, Ye. N. Ponomarev, Yu. I. Ponomareva, R. M. Zimina, V. I. Fedorov and K. V. Belyakov. The new production process was compared to the method employed at Krasnyy Oktyabr' Plant comprising vacuum casting in the ladle which was found to be ineffective in the treatment of 20 to 30 ton charges. Therefore, the plant metallurgists tried out degassing of the steel in the jet as well as circulation vacuum casting. The specimens were adequately degassed with the

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L 21136-65
ACCESSION NR: AP4046655

steel giving up gas at a rate of 200 to 300 l/min. Hydrogen contents decreased from 43 to 54%. In the process of vacuum casting steel in the ladle, the specimens displayed greater amounts of oxide and sulfide inclusions than in circulation vacuum casting or vacuum casting during reladling. The greatest number of globular inclusion was identified in specimens produced by vacuum casting in the ladle. The appearance of this defect is attributed to the increased contact of lightweight melts with chamotte refractories. The authors give preference to circulation vacuum casting despite globule formation and suggest that the use of alumina-rich brick for the lining of the vacuum chamber through which argon is blown and for the sleeve coil lining would substantially improve this process. However, it still remains to be tested on a mass production scale and with heavy weight melts. Orig. art. has: 3 figures and 2 tables

ASSOCIATION: None
SUBMITTED: 00 ENCL: 00 SUB CODE: MM
NR REF SOV: 003 OTHER: 002

Card 2/2

FATKULLIN, O. Kh.; OYKS, G. N.; ANSHELES, I. I.

Testing on a test stand the method of circulating vacuuming of liquid steel. Izv. vys.ucheb.zav.; chern.met.7 no. 5:53-57 '64. (MIRA 17:5)

1. Moskovskiy institut stali i splavov.

FATKULLIN, O.Kh.; CHUKHLOV, V.I.; OYKS, G.N.; ANSHELES, I.I.; [illegible]; SIVKOV, S.S.; FEDAN, A.T.; FEDOROV, V.I.; DANILIN, V.I.

Deoxidizing ball-bearing steel with vacuum treatment by ferroaluminum. Metallurg 10 no.12:20-22 D '65. (MIRA 18:12)

1. Zavod "Krasnyy Oktyabr'" i Moskovskiy institut stali i splavov.

OYKS, G.N.; MATEVOSYAN, P.A.; ANSHELES, I.I.; FATKULLIN, O.KH.; SELIVANOV, V.M.; SERAYGIN, G.D.; SIVKOV, S.S.; FEDAN, A.T.; Prinimali uchastiye: PETROV, B.G.; KUL'KOVA, M.N.; PONOMAREV, Ye.N.; PONOMAREVA, Yu.I.; ZIMINA, R.M.; FEDOROV, V.I.; KOLYAKOVA, K.V.

Results of vacuuming ball-bearing steel by various methods. Stal' 24 no.9:805-809 S '64. (MIRA 17:10)

L 10152-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JW

ACC NR: AP6022507 SOURCE CODE: UR/0133/66/000/004/0327/0328

41
40

AUTHORS: Oyks, G. N.; Matevosyan, P. A.; Ansheles, I. I.; Fatkullin, O. Kh.; Selivanov, V. M.; Petrov, B. S.; Sivkov, S. S.; Fedorov, V. I.

ORG: none

TITLE: Experimental smelting of ball-bearing steel by using a refusing method employing a new technology

SOURCE: Stal', no. 4, 1966, 327-328

TOPIC TAGS: alloy steel, ball bearing steel, metallurgic research / ShKh15 alloy steel

ABSTRACT: A new technology for smelting ball-bearing steel employing a refusing method was developed. This method is based on the results of an earlier investigation by G. N. Oyks, P. A. Matevosyan, I. I. Ansheles, i dr. (Novaya tekhnologiya vyplavki sharikopodshipnikovoy stali, Metallurgizdat, 1962). The salient points of the new technology are: 1) the furnace charge consists of 100% ball-bearing steel scrap; 2) to insure desulfonation, the slag is reduced with pulverized coke only; 3) the oxygen concentration is maintained by additions of red hot bauxite. After the above three steps, the steel is evacuated and poured in the usual way. A comparison of the new method with older ones is presented (see Fig. 1). It is concluded that the new method yields ball-bearing steel of higher quality.

Card 1/2 UDC: 669.187.2

L 10452-67

ACC NR: AP6022507

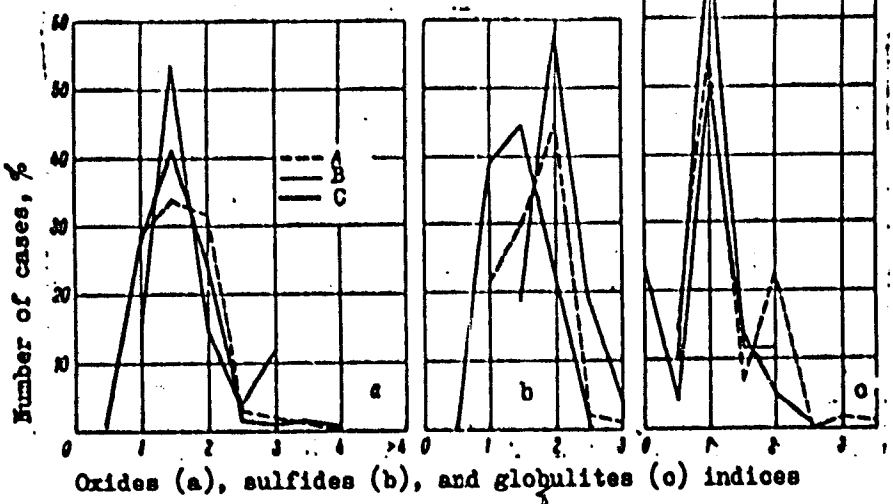

Fig. 1. Comparison of impurities in steel ShKh15 (a) oxides, (b) sulfides, and (c) globulites obtained by evacuation under usual slags (A) and slags of increased oxidative power (B - smelting with oxidation agent, C - smelting according to the new refusing method).

Orig. art. has: 2 tables and 2 graphs.

Card 2/2 SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 001

MICHELES, I.M. DECEASED C'1960 1962/5

SEE ILC

EPIDEMIOLOGY

ANSHELES, I.M. [deceased]; NOVGORODSKAYA, E.M.; SAVOSHNIKOVA, V.A.; GOL'DBERG, R.M.; CHAKHUTINSKAYA, M.G.

Epidemiological characteristics of dysentery during a downward curve of the incidence in a large populated center. Trudy Len. inst. epid. i mikrobiol. 24:15-53 '63. (MIRA 18:10)

1. Iz sektora epidemiologii i laboratorii kishechnykh infektsiy, Instituta epidemiologii i mikrobiologii imeni Pastera.

ANSHELES, I.M., [deceased]

Sanitary-epidemiologic and sanitary-demographic conditions and the effectiveness of compound sanitary-prophylactic measures in the prevention of dysentery. Conclusion. Trudy Len. inst. epid i mikrobiol. 24:82-83 '63.

(MIRA 18:10)

ANCHELES, I.M. [deceased]; KOZLOVA, N.A.; SAPOZHNIKOVA, V.A.

Sanitary-epidemiological and sanitary-demographic conditions and the effectiveness of compound sanitary and prophylactic measures in the prevention of dysentery. Reports Nos. 1-3. Trudy Len. inst. epid. i mikrobiol. 24:54-81 '63

Epidemiologic significance of migration during the summer months in large populated centers. Ibid.:84-92

(MIRA 18:10)

1. Iz sektora epidemiologii (rukovoditel' I.M. Ancheles) Instituta epidemiologii i mikrobiologii imeni Pastera.

ANSHELES, M. M.; GRIGOR'YEVA, N. G.; KACHANSKAYA, YE. S.; KAUSHANSKAYA, B. YE.; ROSENTAL', E. V.; SAPOZHNIKOVA, V. A.; SINITSKIY, A. A.

"Experience of active immunization against measles."

Report submitted at the 13th All-Union Congress of Hygienists, Epidemiologists and Infectionists, 1959

S/564/57/000/000/004/029
D258/D307

AUTHOR: Ansheles, O. M.

TITLE: Some problems of the connection of crystal form with crystal structure

SOURCE: Rost kristallov; doklady na Pervom soveshchanii po rostu kristallov, 1956 g. Moscow, Izd-vo AN SSSR, 1957, 67-73

TEXT: Consideration of earlier work and of the Kossel-Stranskiy theory of crystal growth leads the author to propose that the order of structural importance is primarily governed by density of rows within crystalline faces rather than by the reticular density; the latter would only be true if reticular density were proportional to the row density. Under given physical conditions, presence of physically possible faces will depend on the practical range of interaction of the particles of the growing crystal with particles of the surrounding medium.

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S/564/57/000/000/004/029
D258/D307

Some problems of...

Consideration of deposition of particles on the face of a cube with a simple cubic lattice shows that, under a given set of conditions, only such faces are physically possible in which the distance between two particles (in at least two non-parallel rows) is equal to, or less than, the maximum range of practical interaction between particles of crystal and those of the surrounding medium from which the crystal is growing. The rate of growth parallel to a crystal face is greater than the rate of growth perpendicular to this face; the two rates may, however, be equal to each other in certain cases, leading to skeletal, dendritic, or antiskeletal forms. This is illustrated on the example of diamond crystals. There are 2 figures and 3 tables.

Card 2/2

ANSHELEVICH, TS.V. (Yelgava)

Ballistocardiographic studies in anemia. Klin.med. 38 no.10:130-132 O '60. (MIRA 13:11)

1. Iz terapevticheskogo otdeleniya (zav. - R.Ya. Chakste) Yelgavskoy mezhrayonnoy bol'nitsy (glavnyy vrach B.A. Kleyman)
(ANEMIA, (BALLISTOCARDIOGRAPHY)

VILENSKIY, L.I., prof., doktor med.nauk; ANSHELEVICH, V.A.; DIL'DAROV, I.Ye. (Riga)

Temporary incapacity in coronary insufficiency. Sov.med. 22 no.2:15-21 F '58. (MIRA 11:4)

(CORONARY DISEASE
length of invalidism)
(DISABILITY EVALUATION, in various dis.
coronary insuf., length of invalidism)

BLYUGER, A.F.; ANSHELEVICH, Ye.V.; IZRAYLET, L.I.; KLEYNER, G.I.

Method for effective bicillin administration. Antibiotiki 6 no.4:324-327 Ap '61. (MIRA 14:5)

1. Institut organicheskogo sinteza AN Latviyskoy SSR, Rizhskiy meditsinskiy institut i Rizhskiy zavod meditsinskikh preparatov.
(PENICILLIN)

ANSHELEVICH, Yu. V., Cand Med Sci -- (diss) "Data for study of the functional condition of the cardiovascular system in clinical picture of tuberculosis of the lungs." Riga, 1958. 18 pp (Min of Health Latv SSR, Riga Med Inst), 300 copies (KL, 16-58, 122)

KALNYAN'SH, N.E. [Kalniņš, E.], kand.med.nauk; ANSHKLEVICH, Yu.V.

Case of successful therapy of Addison's crisis. Sov.med. 23 no.9: 125-126 S '59. (MIRA 13:1)

1. Iz kliniki propedevtiki (zav. E.E. Kalnyn'sh) Rizhskogo meditsinskogo instituta (ispolnyayushchiy obyazannosti direktora - prof. V.A. Kal'berg).
(ADDISON'S DISEASE ther.)

KALNYN'SH, E.[Kalnins, E.]; ANSHELEVICH, Yu.

Experience in using bicillin-3 in the therapeutic clinic. In Russian. Vestis Latv ak no.4:183-184 '60. (KEAI 10:7)
(BICILLIN)

CHERFAS, Z.M., kand.med.nauk; ANSHELEVICH, Yu.V., kand.med.nauk (Riga)

Use of strophanthin and digitalis in auriculoventricular and intraventricular conduction disorders. Klin.med. 38 no.12: 77-82 D '60. (MIRA 14:2)

1. Iz kafedry propedevtiki vnutrennikh bolezney (zav. - kand.med. nauk E.E. Kalnyn'sh) Rizhskogo meditsinskogo instituta (dir. - prof. V.A. Kal'berg).
(HEART BLOCK) (DIGITALIS) (STROPHANTHIN)

ANSHELEVICH, Yu. [Anselevics, J.]; AMELI", A. [Amelins, A.]; MEIZOBS, M. [Meizobs, M.]

Induction of necroses in the myocardium of rabbits by isadrine (isopropylnoradrenaline) [with summary in English]. Vestis Latv ak no.12:91-94 '61.